

The nuclear regulatory commission is the federal agency responsible for ensuring the safety of certain radioactive materials. Radiation is a form of energy. Many industries, including INDOT use equipment such as nuclear measuring gauges that incorporate a radioactive source. These nuclear gauges provide an inexpensive, yet highly reliable and accurate method of measuring the thickness, density, or make-up of a wide variety of material surfaces.

Each nuclear gauge contains one or two small radioactive sources. The source's strength is measured in terms of how much radioactive energy it gives off. You are protected from receiving excess radiation by the source shielding, by proper handling techniques, and by the fact that the NRC performs a safety evaluation of all nuclear gauges in the United States to ensure that, under proper use, they will pose no radiation hazard.

REGISTRATION, LICENSING, INSPECTION, AND TESTING

When operating the gauges you use must comply with NRC regulations. All gauges must be registered with the State of Indiana (specifically, Indiana State Department of Health's Indoor and Radiologic Health Division) and licensed and approved for use by the NRC before being put into operation. Once a gauge is approved, the NRC issues a license to INDOT. Once the gauge is in place and being used, tests (called leak tests) must be performed regularly to ensure that the radioactive source is securely within its capsule and is not leaking out. Every six months, INDOT arranges for these leak tests to be performed. If the source is not leaking, INDOT receives a document to that effect. The NRC will normally conduct a compliance inspection once every two years to see if the tests have been performed on schedule, and to ensure that other license conditions and regulations are being followed. Never use or manipulate a gauge without proper training, knowledge of the instruction manual, and authorization.

STORAGE

Before storing the gauge, make sure the source is in the "safe" position. Lock the source and shutter in place. Never modify or change the source holder, shielding or safety interlocks without NRC approval. Store the gauge in a locked, fire-resistant container. Identify the container in case the gauge is lost, damaged, or misplaced. Post a radiation warning sign outside the storage area.

Nuclear gauges are often stored at INDOT construction field offices. For compliance with State regulations, field offices do not have to display the state registration. Rather, it is sufficient to post the following sign on the bulletin board:

NRC documents and State Radiation Safety Registrations are available at the following address: _____ (where the **address** is the office address for the district radiation safety officer).

TRANSPORTATION AND DISPOSAL

When taking a gauge to and from a job site, place it in its storage container and keep it in an unoccupied part of the vehicle, such as the locked trunk, or secure it to an integral part of the vehicle. Lock the vehicle when the gauge is in it. For disposal, return gauges to the supplier or to a waste disposal organization approved by the NRC. When sending the gauge to the supplier, package it according to the U.S. Department of Transportation regulations on the transport and packaging of radioactive materials found in 49 Code of Federal Regulations(CFR) Part 173.

Nuclear gauges are typically transported in Type "A" packages. Type "A" packages normally contain relatively small quantities of radioactive materials. To be in compliance with the regulations, such packages must be able to withstand drop, penetration, compression and vibration tests, as well as exposure to extreme climatic conditions that are encountered in normal transportation. The shipper must maintain on file the results of tests conducted on the transport package. These will normally be supplied by the manufacturer. Licensees who transport gauges to and from temporary job sites in licensee or private vehicles are shippers acting as private carriers and must comply with USDOT regulations governing both shippers and carriers. A shipping paper must be carried in the vehicle. Such papers must contain certain information and be stored within easy reach of the driver of the vehicle. The shipper must label and mark each package used for transporting the gauge. Each shipper must maintain on file the results of tests conducted on the transport package and the sealed sources contained in the gauges. The package (gauge by itself or within a case) must be blocked or braced to prevent movement of the package within the vehicle.